

What is claimed is:

1. A fuel cell system comprising a fuel cell stack formed by stacking a plurality of fuel cells each including an electrolyte electrode assembly and a pair of separators for sandwiching said electrolyte electrode assembly, said electrolyte electrode assembly including a pair of electrodes and an electrolyte interposed between said electrodes, said fuel cell system further comprising:

a heating mechanism for heating at least one of said fuel cells by external electrical energy;

a power generation circuit for causing said fuel cell to generate electrical energy; and

a switching mechanism for selectively connecting said fuel cells to said power generation circuit.

2. A fuel cell system according to claim 1, wherein said fuel cells are stacked vertically, and said heating mechanism is provided at least above an outermost fuel cell at an upper end of said fuel cell stack.

3. A fuel cell stack according to claim 1, wherein said power generation circuit includes an electric heater.

4. A method of warming up a fuel cell stack formed by stacking a plurality of fuel cells each including an electrolyte electrode assembly and a pair of separators for

sandwiching said electrolyte electrode assembly, said electrolyte electrode assembly including a pair of electrodes and an electrolyte interposed between said electrodes, said method comprising the steps of:

5 (1) warming up at least one fuel cell by external electrical energy until temperature of said at least one fuel cell reaches a power generaiton temperature;

 (2) causing said at least one fuel cell to generate electrical energy for warming up another fuel cell adjacent
10 to said at least one fuel cell;

 (3) causing said at least one fuel cell and said adjacent fuel cell to generate electrical energy for warming up still another fuel cell; and

 repeating the step (3) for all of said fuel cells for
15 warming up all of said fuel cells.

5. A warming up method according to claim 4, wherein said fuel cells are stacked vertically, and include a coolant flow field for supplying a coolant to exchange heat,
20 said steps comprising the step of:

 warming up an outermost fuel cell using external energy for causing said outermost fuel cell to generate electrical energy, and warming up an underlying fuel cell adjacent to said outermost fuel cell.

25 6. A warming up method according to claim 5, wherein after all of the fuel cells are warmed up, said coolant is

circulated through said coolant supply field of said fuel cells.

7. A warming up method according to claim 4, wherein
5 when one of said fuel cells is warmed up to have a predetermined temperature, warming up operation of said fuel cell having said predetermined temperature is finished.

8. A warming up method according to claim 4, comprising
10 the steps of:

measuring temperature of said fuel cells; and
warming up at least one fuel cell having the highest temperature by external electrical energy.

9. A warming up method according to claim 4, wherein a
15 plurality of fuel cell stacks are warmed up, and said method further comprising the step of:

after warming up all of the fuel cells of one fuel cell stack, causing said one fuel cell stack to generate
20 electrical energy for warming up all of the fuel cells of another fuel cell stack.

10. A warming up method according to claim 9, wherein
after temperature of a coolant circulated through said one
25 fuel cell stack reaches a predetermined temperature, said coolant is circulated through another fuel cell stack for warming up said other fuel cell stack.